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ABSTRACT

First-year progress (1978-1979) is reported for a three-year project undertaken by Durham College (an historically black, independent, junior college) to implement Bloom's Mastery Learning Strategy in an effort to improve the self-esteem and motivation of educationally disadvantaged minority students. The report first presents a rationale for the project based on the increased enrollment of students with basic skill deficiencies, and then identifies the outcomes expected during the first year of the project: (1) the development of mastery materials for eight instructional areas, (2) the classroom application of these materials during at least one academic term, (3) the maintenance of records on the performance of students undergoing mastery strategy instruction, and (4) the participation of involved faculty in a two-week professional seminar at the City Colleges of Chicago (CCC). Activities carried out to produce these outcomes are then discussed. The results of an evaluation of these activities are detailed, based on a comparison of the final grades earned by students in mastery learning and conventional classes. The report concludes with an outline of activities planned for the second year and an examination of Durham's efforts to disseminate program information to other colleges. An evaluative report by Emmett Jones of CCC is appended. (JP)

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Mastery Learning Program

Durham College

Durham, North Carolina

Employer Identification Number

NA 56 05 18117

Project Director: Dr. Donald R. Wire

REPORT ON PROGRESS DURING THE FIRST YEAR

September 1, 1978 - August 31, 1979

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I. INTRODUCTION

DURHAM COLLEGE is an historically black, independent junior college which is located in Durham, North Carolina. The COLLEGE has traditionally served a population of disadvantaged minority men and women who are predominately from rural, low income families in North Carolina, South Carolina, and Virginia. A large majority of these students, usually about 70 per cent, rank in the lower quarter of their high school graduating classes. Most are the products of small under-financed high schools where the total educational process has been inadequate in providing the basic skills necessary for successful postsecondary achievement.

Each fall, the COLLEGE faces a new wave of entering freshmen who bring with them special problems. Data relative to the reading, computative, and writing skills of the high school seniors show that over 70 per cent of these students perform below the 9th grade norms in basic skills, and 50 per cent of the 70 per cent perform below the 7th grade norms in reading, writing, and arithmetic. Accompanying these academic weaknesses which are obvious in the students is a sense of futility and despair in their approach to the learning process. Academic failure has bred a sense of futility in further attempts at learning. This affective problem is as great as any cognitive one which the COLLEGE faces in administering to the special needs of its students.

During the academic year, 1976 - 1977, the administration and faculty of DURHAM COLLEGE reviewed its mission as a postsecondary institution and reassessed the effectiveness of its approach to achieving that mission. As a result, the COLLEGE family focused on the special needs of its students and decided that the traditional learning strategy in use was inappropriate to the achievement of its mission.

After carefully studying the problem and reviewing alternative strategies, the administration decided to seek funds for the implementation of a Mastery Learning Strategy. Earlier in the same year, two instructors had experimented in their English classes with the Bloom Strategy which had been introduced to the faculty by Dr. Emmett Jones, co-author of Mastery Learning: A Strategy for Academic Success in a Community College, and Director of the Mastery Learning Program in the City Colleges of Chicago. During the academic year, 1977 - 1978, a comprehensive instructional improvement proposal was submitted to FIPSE. That proposal was funded for approximately $103,000 over a three-year period.

DURHAM COLLEGE began implementation of the Bloom Strategy on September 1, 1978. Dr. Donald R. Wire, Academic Dean of Durham College, was appointed Program Director and Dr. Emmett Jones of the City Colleges of Chicago was selected as the program consultant.

This report is an account of the activities and outcomes of the first year, September 1, 1978 - August 31, 1979, of the Mastery Learning Program at DURHAM COLLEGE.

II. OUTCOMES WHICH WERE EXPECTED DURING THE FIRST YEAR

1. Eight full-time faculty members will have developed complete sets of Mastery materials for eight courses and will have become knowledgeable in the application of the Bloom Strategy in the classroom.

2. The eight faculty will have applied these materials and the Bloom Strategy in the classroom during the period of at least one academic term.

3. The eight faculty will have maintained records on the performance of their students under the Mastery Strategy during the course of the term.

4. Five faculty will have spent a period of about two weeks in professional association with experienced Mastery faculty of the City Colleges of Chicago.

III. NARRATIVE OF ACTIVITIES CARRIED OUT TO PRODUCE EXPECTED OUTCOMES

Dr. Emmett Jones, the program consultant, first came to the campus in October of 1978 for the purpose of planning the specific activities for the first year and for anticipating those for the second and third years. As a result of the initial planning session, Dr. Jones was scheduled to return to the campus in December of 1978, to conduct a day-long orientation of the faculty and staff on the concepts and techniques of the Bloom Strategy. All full-time faculty and several administrators participated. Dr. Jones handed out numerous materials and instructed the faculty on how they would proceed in the development of course materials for the one course which each had selected. He set specific objectives to be achieved by each faculty member before the time of his next visit in January 1979. Dr. Wire, the Program Director, monitored the progress of the faculty in these activities and provided assistance and support.

When Dr. Jones returned in January, he found that considerable progress had been made. He and the Program Director evaluated the work of each of the seven full-time faculty and one administrator who were developing the Mastery course materials. After the first evaluation, Dr. Wire decided that all evaluations, henceforth, should be documented in written form. Participants were to receive monthly incentive checks of $32 on the condition that they had achieved the specific objectives set at the time of the previous consultation session.

Dr. Jones came for the third consultation session in early February, 1979. He found that good progress had been made and documented such on the evaluation forms. He indicated that all eight participants should be able to complete their

first sets of Mastery materials before his next scheduled visit at the end of February 1979. When he returned at that time, he found that all of the participants had completed their course materials. During that visit, Dr. Jones fully prepared each faculty member for the immediate application of their materials in the classroom.

During the spring quarter 1979, seven faculty applied their Mastery materials and the Bloom Strategy in their respective classes. One instructor, who had two sections of the Fundamentals of English, was able to use one of these as a control class for evaluation purposes. The other six instructors recorded performance data from the most recent class which they had instructed in the same course for the purpose of providing control data for evaluation; this technique for evaluation was recommended by the program consultant, Dr. Jones. Dr. Jones returned to the campus three times during the spring quarter 1979, for the purpos of faculty guidance and program evaluation. During May 1979, six faculty were developing new materials as well as applying those previously developed. During his final visit at the end of the quarter in May 1979, Dr. Jones compiled and analyzed all of the performance data and completed the program evaluation for the first year of the Mastery Learning Program at DURHAM COLLEGE. That evaluation will be discussed later in the report.

IV. THE ACHIEVEMENT OF EXPECTED OUTCOMES

The outcomes which were expected during the first year of the Mastery Learning Program at DURHAM COLLEGE were outlined in Section II of this report.

The first expected outcome was achieved in that eight faculty members completed sets of Mastery materials for eight courses and became knowledgeable in the application of the Bloom Strategy in the classroom. The evaluation sheets for February 1979, document this fact. See the appendix for samples of Mastery materials.

The second expected outcome was largely achieved in that seven faculty applied Mastery materials and the Bloom Strategy in the classroom during the period of the spring quarter, 1979. The eighth faculty member had resigned prior to application.

With reference to the third expected outcome, seven faculty maintained records on the performance of their students under the Mastery Strategy.

The fourth expected outcome was not achieved because the Chicago trip could be scheduled only at a time during the summer when conflicts developed for the Mastery faculty who were scheduled to attend. The Mastery faculty were not employed during the summer because of limited enrollment.

V. PROGRAM EVALUATION OF THE FIRST YEAR

Dr. Jones, program consultant, conducted an evaluation of the Mastery Learning Program at DURHAM COLLEGE on May 24 and 25, 1979. He interviewed and collected performance data from each of the seven Mastery faculty members. After compiling and analyzing the data, Dr. Jones presented and discussed his findings in a report which is contained in the appendix of this report.

It should be kept in mind that the intent of the Mastery Learning Program at DURHAM COLLEGE is not to prove the effectiveness of the Bloom Strategy per se; considerable research has already demonstrated this effectiveness. The strategy was selected in the first place because of this. Dr. Wire and Dr. Jones felt that one of the most suitable ways to evaluate the effectiveness of the program at DURHAM COLLEGE would be to compare student performance in the Mastery and Control classes. It was also felt that the subjective observation of the Mastery faculty would constitute another legitimate measure of the effectiveness of the program at DURHAM COLLEGE. Both techniques, therefore, have been employed in the evaluation process.

Data is first presented here for 99 students who took the initial formative Test #1 in their respective courses; following that is the data for the 44 students

who failed to achieve Mastery on the first test and therefore took the parallel Re-Take #1 after doing corrective work.

FORMATIVE TEST #1

		A	B	C	D	F
Number	99	30	22	19	14	14
Percent	100	30	22	19	14	14

RE-TAKE TEST #1

		A	B	C	D	F
Number	44	10	10	11	2	11
Percent	100	23	23	25	4	25

The above data shows that 28 students scored in the "D - F" category on the initial test on the materials covered in Unit One. On the re-take test, following corrections, only 13 students demonstrated the same deficiencies.

The above data also shows that 52 percent of the students scored in the "A - B" category on the initial test on the materials covered in Unit One. After the re-take, the percent rose to 72. That is 72 percent of all students enrolled in Mastery Learning classes finally achieved mastery on materials covered in Unit One.

The set of data presented below is a summary of final grades earned by students in the Mastery and Control classes at the end of the spring quarter 1979. In each instance, the Control class was taught by the same instructor, had the same objectives, and used the same text as the Mastery class; however, all of the Control classes except one were taught during quarters previous to the Mastery classes.

The data shows the results which were produced during the spring quarter 1979, in the disciplines cited. Although the data does not demonstrate marked superiority in the effectiveness in the Mastery Learning Strategy over the

traditional strategy in the seven academic areas cited, Dr. Jones' assessment indicated that there had been an over-all improvement in instruction within DURHAM COLLEGE. See Dr. Jones' report in the appendix. The small enrollment in the classes makes it difficult to attach statistical significance to the data. Even so, 78 percent of the Mastery students achieved final grades of "A - B" as compared with 75 percent of the Control students. It is also important to note that the small Control classes allowed for a great deal of individualized instruction; therefore, the cognitive achievement seen there would be very difficult to improve upon, even using tutors on a one-to-one student-teacher relationship. (See data on page 8).

One must keep in mind that the results presented here represent the first attempt at implementing the Mastery Learning Strategy on the part of the faculty at DURHAM COLLEGE. Dr. Jones has indicated that the Mastery experience at the City Colleges of Chicago demonstrates that more experienced instructors produce better results than do those who are using the strategy for the first time.

A large majority of the Mastery faculty at DURHAM COLLEGE reported an increased enthusiasm for learning on the part of their Mastery students. Repeated successes on the diagnostic-progress tests seemed to have significantly increased a student's academic self-concept with regard to general school ability. Also according to the written and oral observations presented by the faculty, the students seemed to have become more interested in studying and learning specific subjects.

According to the observations of Dr. Jones and Dr. Wire, the experience with the Mastery Learning Strategy also produced changes in instructor behavior and attitudes. Instructors no longer think of their function as singling out and certifying qualified students. Most have moved to the view that the teacher's role is to facilitate learning for all, thereby minimizing disparity in student cognitive achievement.

	MASTERY						CONTROL					
	(N)	A	B	C	D	F	(N)	A	B	C	D	F
Business Law	(4)	2	2	0	0	0	(12)	7	3	2	0	0
Psychology	(31)	16	10	3	1	1	(26)	10	12	3	0	1
Shorthand	(3)	1	1	0	1	0	(9)	3	4	2	0	0
Fashion Buying	(8)	5	2	1	0	0						
English Fundamentals	(18)	4	7	5	0	2	(11)	5	2	3	1	0
Business Mathematics	(20)	10	5	4	1	0	(20)	7	5	8	0	0
Records Management	(1)	1	0	0	0	0	(2)	1	1	0	0	0
Total	(85)	39	27	13	3	3	(80)	33	27	18	1	1
Percent		46	32	15	3.5	3.5		41	34	23	1	1

Those students who have experienced success with the Mastery Strategy are asking for more classes using that approach.

Dr. Jones has concluded in his report that the extended use of the Mastery Strategy within DURHAM COLLEGE will continue to cause over-all improvement in instruction and that as the class sizes increase, this improvement will become more manifest statistically.

VI. EXPENDITURES FOR THE FIRST YEAR

The Business Office is in the process of preparing the official financial report which will be forwarded as an addendum to this report.

VII. OUTCOMES WHICH ARE EXPECTED DURING THE SECOND YEAR

The Mastery Learning Program is currently in its second year at DURHAM COLLEGE. The following are the outcomes which are expected during the second year:

1. Eight faculty members will have developed ten additional sets of Mastery materials for use in the classroom. This will mean that since the beginning of the program in September 1978, 18 sets of materials will have been produced and 11 of these will have been applied by 8 faculty in the classroom.

2. The student performance records maintained by the faculty will demonstrate that performance in the Mastery classes is superior to that in the Control classes.

3. The results of the affective tests in the Mastery and Control classes will indicate greater improvement in academic self-confidence and motivation in the Mastery classes than in the Control classes.

VIII. NARRATIVE OF ACTIVITIES BEING CARRIED OUT TO PRODUCE THE EXPECTED OUTCOMES

In the faculty workshops during the first week in September 1979, the Mastery faculty, numbering six, continued work on their second sets of Mastery materials. Dr. Wire assigned the faculty to the Mastery and Control classes

for the fall semester. Each member's teaching load was divided equally between the Mastery and Control classes; for example, a faculty member teaching four sections of English Fundamentals would instruct two of these according to the Mastery Strategy and the other two according to traditional techniques. In addition, Dr. Wire prepared the faculty to administer the pre-test which would measure the affective traits of each learner, i.e., self-confidence and motiviation; this instrument was designed by the graduate students of Benjamin Bloom, the developer of the strategy.

Five faculty members administered the pre-test to their students during the first or second class meeting of the fall semester 1979. They will administer a similar post-test at the end of the semester in January. An analysis of pre-and post-test scores will indicate any changes in self-confidence and motivation among students in both sets of classes; this technique will demonstrate whether or not the third expected outcome of the second year has been produced.

Dr. Jones came to the campus at the end of the second week of classes, fall semester 1979, for the purpose of orienting the one new full-time faculty member and to review the individual progress of the six faculty already developing new materials and applying their completed materials in the classroom. On the evaluation sheets, he rated the progress as excellent.

Dr. Jones is scheduled to return to the campus at the end of November 1979, to review the second set of completed materials and to orient two faculty members who have not previously participated in the program. By the end of November 1979, the number of completed sets of Mastery materials will be 13, and the number of faculty who have been involved in development or application will be eight. By the end of the academic year in May 1980, Dr. Wire expects that

eighteen sets of materials will have been developed and that 11 of these will been applied in the classroom by a total of eight Mastery instructors.

When the spring semester begins in February 1980, the Mastery faculty will pre-test their students and then utilize their new materials, along with those previously developed for instruction in their scheduled courses. Dr. Jones will return to the campus at the end of February to review progress in materials development and student performance. After that, he will not return until the end of May 1980, at which time, he will approve completed materials, compile and analyze performance data, and complete the end-of-year evaluation for the second year of the program. Dr. Jones' analysis of student performance will indicate whether or not the second expected outcome of the second year has been produced.

Between Dr. Jones' visits, Dr. Wire will visit classrooms, set monthly objectives, monitor activities, and evaluate progress. He will see to it that the two sets of classes are being conducted in a way that will make possible and facilitate a meaningful statistical comparison and analysis of performance data.

Following is the budget which has been approved for the 1979-1980 academic year, the second year of the program:

MASTERY LEARNING BUDGET
September 1, 1979 - August 31, 1980

Direct Costs	
Salaries and Wages	
Director's	$ 4,800.00
Incentives	2,680.00
Clerical	5,100.00
Employee Benefits	1,887.00
Consultant	800.00
Travel	1,499.00
Material and Supplies	6,000.00
Equipment	2,000.00
Production	4,064.00
Indirect Costs	5,168.00
Total	$33,998.00

IX. DISSEMINATION OF PROGRAM INFORMATION

Dr. Wire has disseminated information upon request, on the organization, activities, and outcomes of the Mastery Learning Program at DURHAM COLLEGE to the following institutions:

Anne Arundel Community College
Arnold, Maryland

Northern Virginia Community College
Annandale, Virginia

Antioch University
Los Angeles, California

On October 12, 1979, Dr. Wire and Donald Ward, Director of Institutional Advancement at DURHAM COLLEGE, attended the annual conference of the North Carolina Association for Developmental Studies which was held at Wayne Community College in Goldsboro, North Carolina. They made an hour presentation on the Mastery Program at DURHAM COLLEGE: approximately 30 representatives from community colleges across North Carolina were present at the session. During the presentation, which was well-received, Dr. Wire and Mr. Ward answered numerous questions, distributed voluminous handouts, and displayed exhibits pertaining to the program. See the appendix for the conference program.

The above dissemination activities are in line with the objectives and activites outlined in the original proposal. The Director deems the accomplishment of dissemination activities within and outside North Carolina to be very important.

Dr. Donald R. Wire, Academic Dean
Program Director

Dr. J. W. Hill, President
Authorizing Official

May 25, 1979

TO WHOM IT MAY CONCERN:

I served as a consultant for the 1978-79 Mastery Learning Project conducted at Durham College. Seven faculty members actively participated in the program; and they represented the following academic areas: business law, psychology, shorthand, fashion buying, English composition, business mathematics and records management.

During the academic year I spent a total of nine days on campus discussing the principles, practices and out-comes of the Mastery Learning strategy as developed by Professor Benjamin S. Bloom of the University of Chicago.

The following charts show the distribution of final grades acheived by students enrolled in Mastery Learning and control classes.

Mastery Classes						
		A	B	C	D	E
Number	85	39	27	13	3	3
Percent	100	46	32	15	3	3

Control Classes						
		A	B	C	D	E
Number	80	33	27	18	1	1
Percent	100	41	34	23	1	1

The control classes are ones taught by the same instructor in the same academic subjects as the mastery classes. The mastery classes include seven different academic areas with an average of only twelve students per class. Because of the low enrollment at the college, there were classes with only one, four and eight students. The control classes represent six different academic areas with an average of thirteen students per class.

Because of limited offerings at the college, all of the control classes except one were taught in quarters previous to the mastery classes; and therefore one does not know for sure if the student characteristics were comparable in both cases. In addition to the statistical limitations imposed, while interpreting the data one must also keep in mind that the results presented here represent the first attempt at implementing the Mastery Learning strategy on the part of the Durham College faculty. Our work at the City Colleges of Chicago indicates that more experienced teachers produce

better results than do teachers using the strategy for the first time.

Inspite of the above problems and limitations I feel that the project has been moderately successful. Because of the small sized classes the control students were given a lost of individualized attention; and hence they were exposed to an important factor of any learning strategy. Nevertheless, it appears that more of the average or "C" students of the master classes were pushed into the "A-B" range. While the percent of "A-B" students is about the same in both the experimental (mastery) and control groups, the percent of C's is significantly lower in the master classes.

More importantly, the majority of the master faculty reported an increased enthusiasm for learning on the part of students. Repeated successes on the diagnostic-progress tests seemed to have significantly increased the students' academic self-concept with regard to general school ability; and the students also seemed to have become more interested in learning specific subjects.

The experience with the Mastery Learning strategy also produced changes in teacher behavior and attitudes. The teachers no longer think of their function as singling out and certifying qualified students. Most have moved to the idea that the teacher's role is to facilitate learning for all, thereby minimizing disparity in student cognitive achievement.

Durham College is making plans to extend Mastery Learning principles throughout its entire academic area. The students who experienced success with it are asking for additional classes using the approach. I believe that the extended us of the Mastery Strategy will continue to cause overall improvement in instruction at the college; as the class sizes increase this improvement will become more manifest statistically.

Emmett L. Jones,
Professor of Biology
City Colleges of Chicago

NCADS Fall Conference

October 11-12, 1979

WAYNE COMMUNITY COLLEGE

Goldsboro, NC

Thursday, October 11

12:00 noon	REGISTRATION	
1:15 p.m.	WELCOME	John Brame, President, NCADS William Siler, Vice President for Student Services, Wayne Community College
1:30	HOW TO INVITE THE DISINVITED	Dr. William Purkey, Professor, School of Education, UNC-Greensboro
4:15	NCADS BUSINESS MEETING	John Brame, President, NCADS
6:00	SOCIAL HOUR	

FRIDAY, October 12

9:00 a.m. CONCURRENT INTEREST SESSIONS

(1) TESTING AND STUDENT ASSESSMENT
Facilitator: Ann Frye, Forsyth Technical Institute
Mary Guilford, Coastal Carolina Community College
Ann Frye, Forsyth Technical Institute
Joan Callaway, Lenoir Community College
Robert Sample, Nash Technical Institute

(2) PROGRAM STRATEGIES: TWO SAMPLES
Facilitator: Margaret Crouse, James Sprunt Institute
Dr. Donald Wire, Donald Ward - Durham College
Dr. Arlie Smith, Richmond Technical Institute

(3) SOME APPROACHES IN DEVELOPMENTAL ENGLISH
Facilitator: James Lamm, Wilson County Technical Institute
Thelma Barnes, Southeaster Community College
Briggs Petway, Surry Community College

10:30 a.m. COFFEE BREAK

11:00 a.m. REPEAT OF CONCURRENT INTEREST SESSIONS

12:30 p.m. TOUR OF WAYNE COMMUNITY COLLEGE (optional)

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